

# **DIRECTED NON-CYCLIC GRAPH WALKING SYSTEM AND METHOD**

## **ABSTRACT OF THE INVENTION**

A system and method for efficiently walking a directed non-cyclic graph of data using multiple analysis tools. Provided is a graph walking system, comprising: a binding system for  
5 binding a graph observer with a data graph, for binding node patterns to node observers to generate at least one node pattern/node observer pair, and for binding the data graph observer to at least one node pattern/node observer pairing, and wherein each node pattern includes a computed set of target sub-node patterns; a node relationship graph (NRG), wherein each node in the NRG corresponds to at least one node in the data graph, and wherein each node in the NRG includes a computed set of valid sub-node patterns; graph walking logic for systematically walking through nodes in the data graph and corresponding nodes in the NRG; and a pattern testing system that determines if the set of target sub-node patterns for a node pattern matches the set of valid sub-node patterns for a corresponding NRG node when a node is encountered in the data graph.